1. **Do not assume that race is an empirically-based biological category; it is a *construct*!**
   There is actually much greater variation *within* "racial" groups than between them: "Human populations are not unambiguous, clearly demarcated, biologically distinct groups...DNA analysis indicates that most physical variation (about 94%) lies within so-called racial groups. Conventional geographic 'racial' groups differ from one another only in about 6% of their genes."[1] Race is an historical construct that normalizes inequality and ignores the scope of human diversity.[2]

2. **Do not confuse correlation with causation, especially when comparing different groups.**
   Rule Number One of Science: Correlation does not equal causation. The claim that "[t]hose at the bottom of the economic heap were unlucky when the genes were passed out, and they will remain there"[3] is an attempt to force causal direction on the observed correlation between race and socioeconomic status. In comparing different races in this way, the researcher also has to ask him/herself: *Is there anything that unequally impacts black people in comparison to white people? How about institutionalized racism? Privilege?* Ok, you get our point.

3. **Own your own claims!**
   While Murray and Herrnstein's 800 pages of *The Bell Curve* leaves readers with the distinct impression that IQ is the main cause of economic success and failure, and that genetic difference explain the black-white IQ gap, it also contains defensive, qualifying statements such as: "it seems highly likely to us that both genes and the environment have something to do with racial differences. What might this mix be? We are resolutely agnostic on the issue" (311). No you aren't. (For the record, a 'resolute agnostic' would not usually assume that up to 80 percent of intelligence is based on genetics.)

4. **If you're going to assess *intelligence*, do not hyper-focus on one particular aspect.**
   Murray and Herrnstein base their 800-page book on the assumption that IQ measures a "genuine, and largely genetic, general cognitive ability and then hardly discuss, either pro or con, the theoretical basis for their certainty."[4] While "g" is *one* measure of intelligence, it does not comprehensively explain differences in individual performance. Rather, "[g]ood tests in the information-processing tradition also test the intellectual *process*."[5] IQ is simply not an objective standard across human species; it's a sledgehammer's attempt to do fine scalpel work.

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[1] American Anthropological Association. (1998). http://www.americananthro.org/ConnectWithAAA/Content.aspx?ItemNumber=2583

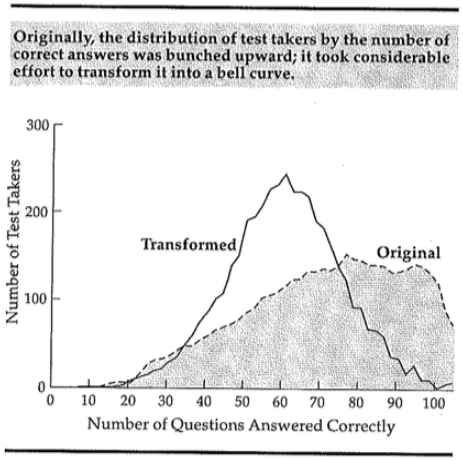
[2] Gannon, M. (2016). "Race is a Social Construct, Scientists Argue." Scientific American.

[3] Montagu, A. (2002). *Race and IQ*. New York: Oxford UP.

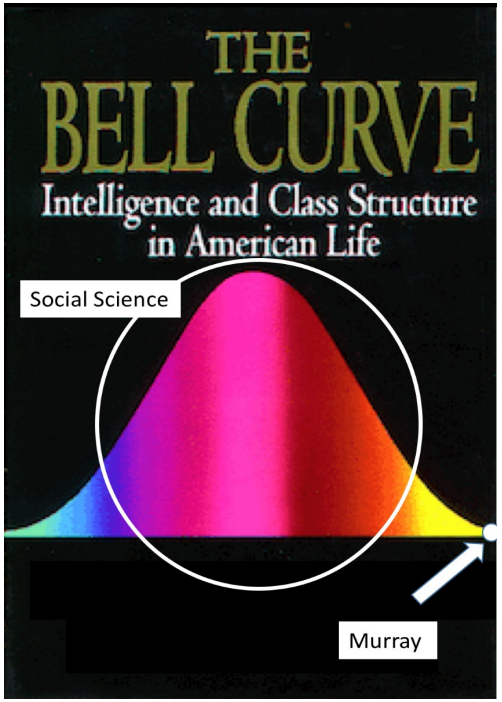
[4] Gould, S. (1994). *Curveball*. The New Yorker. Accessed: http://www.dartmouth.edu/~chance/course/topics/curveball.html

[5] Fischer, C. Hout, M., Jankowski, M., Lucas, S., Swindler, A., Voss, K. (1996). *Inequality by Design: Cracking the Bell Curve Myth.* Princeton, New Jersey: Princeton University Press.

5. **Do not manipulate data!**
   The graph below shows scores from the AFTQ (The Armed Forces Qualifying Test), which Murray used as a measure of intelligence. The shaded area shows the original scores while the "transformed" line shows the end result of Murray's manipulation of data. He gave more credit to higher and lower scores based on the assumption that intelligence must be distributed on a bell curve. In effect, he created the bell curve that his book is based on.[6]


Originally, the distribution of test takers by the number of correct answers was bunched upward; it took considerable effort to transform it into a bell curve.
300
200
100
0
Number of Test Takers
Transformed
Original
0 10 20 30 40 50 60 70 80 90 100
Number of Questions Answered Correctly

2.1. Distribution of Original Scores on the AFQT and Distribution of Scores as Transformed by Herrnstein and Murray (*Source*: Authors' analysis of the NLSY data)



Refuting Murray's 'Alternative Science'

Tips for fact-based research from some skeptical political science majors

[6] Ibid.